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Urocystis narcissi, a new record from Asia

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Abstract—*Urocystis narcissi,* reported here from Pakistan, represents a new record for Asia. This smut fungus was collected for the first time outside its type locality in Spain. *Narcissus tazetta* is recognized as a new host plant for this rare smut.

Key words—Shangla, Swat, taxonomy, *Ustilaginales*, *Ustilaginomycetes*

Introduction

During a survey of *Ustilaginales* in the Shangla and Swat districts of Khyber Pakhtunkhwa (KP) Province, Pakistan, *Narcissus tazetta* was found infected with *Urocystis narcissi*. This rare smut fungus was previously known only from its type locality in Spain. The sampling sites are neighborhood districts located at 34°34′–35°55′N 71°08′–72°50′E. *Narcissus tazetta* was found infected with smut in two areas of Khyber-Pakhtunkhwa (Ahmad & Sirajuddin 1996): one infected sample was collected from Kabal valley, Swat, in February 2015, and the second from Puran valley, Shangla, in March 2015. Nine smut fungi have previously been reported from Swat, but none from Shangla (Ahmad et al. 1997).

Materials & methods

After collection of the infected plants with their inflorescences, the specimens were photographed, and preserved. Free hand sections were cut and scrape mounts of the infected portions were observed under a Labomed CSM2 stereomicroscope. For light microscopic (LM) observations, spores were mounted in lacto phenol solution on glass slides, gently heated to boiling point to rehydrate the spores, and then cooled.

Preparations were examined using a Nikon YS 100 microscope, and photographed with the aid of a Digipro-labomed. Forty spores were measured using a Zeiss eyepiece screw micrometer. For SEM, the spores were critically point dried, attached to specimen holders with double sided adhesive tape, and coated with a 50 nm gold film in a Polaron E5300 freeze drier. The gold-coated specimens were observed and photographed in a Camscan 3-30BM scanning electron microscope. Specimens have been deposited in the herbaria at the University of the Punjab, Lahore, Pakistan (LAH) and Hazara University Mansehra, Pakistan (HUP).

Fig.1: *Urocystis narcissi.* A, B, D. Infected host plants. C, E. Spore balls in LM. Scale bars: A, B = 51 µm; C, D=10 µm; E=11 µm; F= 8 µm.

Taxonomy

Urocystis narcissi (Gonz. Frag.) Vánky, Mycotaxon 48: 41 (1993) Figs 1, 2

≡ *Urocystis colchici* f. *narcissi* Gonz. Frag., Trab. Mus. Nac. Cienc. Nat., Ser. Bot. 7: 22 (1914)

≡ *Turburcinia narcissi* (Gonz. Frag.) Cif., Fl. Ital. Crypt., Fungi 1(17): 101 (1938)

Sori in leaves and scales, yellowish-silver or yellowish-brown or black pustules containing a black powdery mass. Spore balls globose to subglobose or ellipsoid, 25–44 × 31–54 µm, composed of 1–3(–4) spores, completely surrounded by sterile cells. Spores globose to subglobose, ovate or ellipsoidal, 12–21 × 13–24 µm, dark brown, walls smooth; sterile cells variable in shape and size, subglobose to elongated, 4–14 µm long, wall 0.6–1.5 µm thick, yellowish brown to hyaline, smooth.

Specimens examined: On *Narcissus tazetta* L. (*Amaryllidaceae*): **PAKISTAN**, **Khyber Pakhtunkhwa Province**, **Swat District**, Kabal valley Deolai, 1000 m a.s.l , February 2015, leg. Sadiqullah SUS-02 (HUP 315); **Shangla District**, Puran Aloch, 1100 m a.s.l., March 2015, leg. Sadiqullah SUS-03 (HUP 316).

Comments—*Urocystis narcissi* has previously been reported on *Narcissus pallidulus* Graells from the Sierra de Guadarrama, Spain (González Fragoso 1914, as *U. colchici* f. *narcissi;* Ciferri 1938, as *Turburcinia narcissi;* Vánky 1993, 2011). Our collections on *N. tazetta* from Pakistan are similar to those cited in

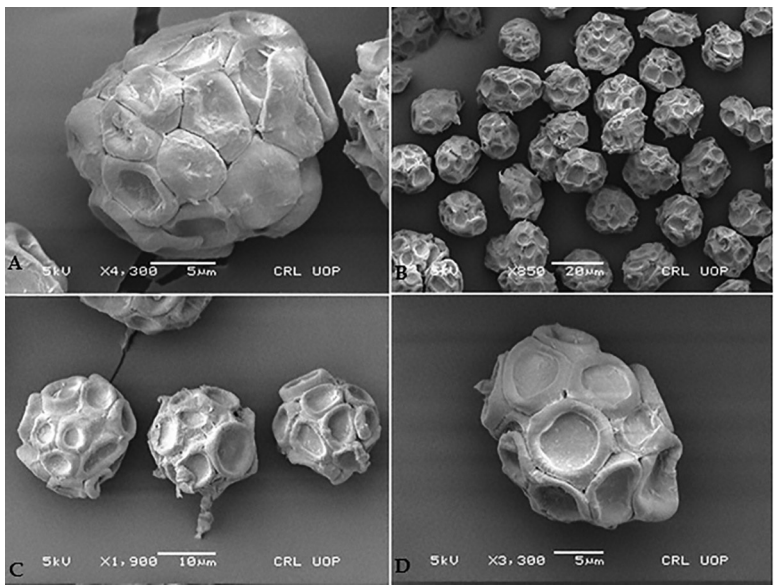

Fig. 2: *Urocystis narcissi.* Spore balls in SEM.

Vanky (2011), except that the maximum spore size in our material was slightly larger. *Narcissus tazetta* is a new host record for this fungus.

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